

Remarks/Arguments:

Claims 1-3 and 5-18 are pending. Claims 1 and 14 are currently amended. Support for the new amendments may be found, for example, at page 13, lines 4-17, and FIG. 4 of the specification. No new matter has been added.

The invention is directed to a hermetic compressor that includes a bipolar permanent magnet motor. The motor includes a stator (including a stator core) and a rotor (including a rotor core). A permanent magnet is disposed in rotor core. In an exemplary embodiment, an axial length of the rotor core is longer than an axial length of the stator core. In an exemplary embodiment, an axial length of the permanent magnet is shorter than the axial length of the rotor core. In an exemplary embodiment, a hollow bore is formed in the rotor core.

Claim 14 has been amended as required, thus obviating the objection to claim 14.

Rejections under 35 U.S.C. § 112

Claims 1-18 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. Claim 1 is currently amended to remove reference to the permanent magnet extending at least to a bottom surface of the bore. Claims 2-18 are dependent upon claim 1. Accordingly, withdrawn of this rejection is respectfully requested.

Rejections under 35 U.S.C. 102 and 103

Claims 1, 11, and 12 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent No. 6,547,538 (Tamura) in view of U.S. Patent No. 6,727,627 (Sasaki). Claims 2, 3, 5-10, and 13-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tamura and Sasaki further in view of U.S. Patent App. Pub. No. 2004/0191094 (Kojima). It is respectfully submitted, however, that the claims are patentable over the art of record for the reasons set forth below.

Tamura is directed to an electric compressor which includes a motor. As shown in FIG. 1, for example, the motor includes a rotor 55 including a rotor core 68 and a permanent magnet 70a in the rotor core 68. Sasaki is directed to a permanent magnet synchronous motor. As shown in FIG. 14, for example, the motor includes a rotor 41 including a rotor core 42 and a permanent magnet 45 in the rotor core 42. In the embodiment shown in FIG. 18, the

permanent magnet 45 does not extend from either side R or S of the rotor core 42. Kojima is also directed to an electric compressor which includes a motor. As shown in FIG. 3, for example, the motor includes a rotor 314 including a rotor core 315 and a permanent magnet 315a in the rotor core 315. In the embodiment shown in FIG. 3, the rotor core 315 has a longer axial length than the stator core 113a.

Applicants' invention, as recited by claim 1, includes a feature which is neither disclosed nor suggested by the art of record, namely:

...the rotor having a built-in permanent magnet in the rotor core,
an axial length of the permanent magnet being less than the axial
length of the rotor core...

...a hollow bore extends from a top end, the top end on the
compressing element side of the rotor core, and the permanent
magnet is positioned in the rotor core so that it extends from a
bottom end opposite the top end of the rotor core.

This means that the rotor has a permanent magnet in the rotor core which is axially shorter than the length of the rotor core. The rotor core has a top end located on the compressing element side of the rotor core and a bottom end located on the opposite side. The permanent magnet extends from the bottom end of the rotor core, while a hollow bore extends from the top end of the rotor core. This feature is found in the originally filed application at page 13, lines 4-17, and FIG. 4. No new matter has been added.

As shown in FIG. 1 of Tamura, for example, Tamura discloses a permanent magnet 70a disposed in rotor core 68. Tamura discloses that the magnet 70a has the same axial length as the rotor core 68. As shown in FIG. 18 of Sasaki, for example, Sasaki discloses a magnet 45 having less axial length than rotor core 42. Sasaki fails to disclose magnet 45 extending from a bottom end of the rotor core 42. As shown in FIG. 1 of Kojima, for example, Kojima discloses a magnet 115a disposed in rotor core 115. Kojima fails to disclose that magnet 115a extends from a bottom end of rotor core 115. Alternatively, as shown in FIG. 2 of Kojima, for example, Kojima discloses magnet 215a having the same axial length as rotor core 215.

The claimed invention is different because none of the references cited disclose the permanent magnet extending from a bottom end of the rotor core and not extending the entire length of the rotor core. The cited references, such as FIG. 1 of Tamura and FIG. 2 of Kojima, for example, disclose a permanent magnet extending the length of rotor core. This is different

because claim 1 recites a permanent magnet which does not extend the entire length of the rotor core. Additionally, the cited references, such as FIG. 18 of Sasaki and FIG. 1 of Kojima, for example, disclose a permanent magnet which does not extend from either side of the rotor core. This is different because claim 1 recites a permanent magnet extending from a bottom end of the rotor core opposite the top end, from which the hollow bore extends.

It is because Applicants include the features of "the rotor having a built-in permanent magnet in the rotor core, an axial length of the permanent magnet being less than the axial length of the rotor core" and "a hollow bore extend[ing] from a top end, the top end on the compressing element side of the rotor core, and the permanent magnet [being] positioned in the rotor core so that it extends from a bottom end opposite the top end of the rotor core" that the following advantages are achieved. This configuration allows the overlap between the permanent magnet, which extends from the bottom end, and the hollow bore, which extends from the top end, to be minimized. "In this configuration, the magnetic flux by permanent magnet 205 occurs in the large part having no bore 212 in rotor core 203, so that a magnetic path wider than the size of permanent magnet 205 can be formed, the material cost of permanent magnet 205 can be reduced without largely reducing the effective magnetic flux amount of permanent magnet 205. Therefore, the efficiency is increased and simultaneously the cost is reduced." See Applicants' specification at page 15, lines 7-12. In contrast, the configurations disclosed by Tamura and Kojima do not allow for the minimization of overlap between the magnet and the hollow bore. Further, Sasaki fails to disclose a hollow bore in the rotor core.

Accordingly, for the reasons set forth above, claim 1 is patentable over the art of record.

Claims 2, 3 and 5-18 include all features of claim 1 from which they depend. Thus, claims 2, 3 and 5-18 are also patentable over the art of record for the reasons set forth above.

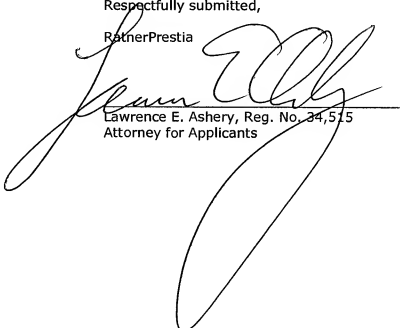
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In view of the amendments and arguments set forth above, the above-identified application is in condition for allowance which action is respectfully requested.

Respectfully submitted,

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